



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,304	07/23/2003	Harold H. Mays	67,010-039;H2624-SUN	8378

26096 7590 09/15/2004

CARLSON, GASKEY & OLDS, P.C.
400 WEST MAPLE ROAD
SUITE 350
BIRMINGHAM, MI 48009

EXAMINER

LE, DANG D

ART UNIT PAPER NUMBER

2834

DATE MAILED: 09/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/625,304

Applicant(s)

MAYS, HAROLD H.

Examiner

Dang D Le

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,6-9 and 11-13 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1,2,6-9 and 11-13 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 2, 6-9 and 11-13 have been considered but are moot in view of the new ground(s) of rejection.
2. However, the applicant's arguments filed 8/17/04 have been fully considered but they are not persuasive. The applicant's argument is on the ground that material with high modulus of elasticity has low mechanical strength. See Sears et al., University Physics, sixth edition, pp. 216-217. Table 10-1 of Sears et al. shows that material with high modulus of elasticity has high mechanical strength.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1, 2, 6-9 and 11-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 9, the claims are vague and indefinite because it is not clear what "the same material" would be. If the end rings are made of cast aluminum as taught in page 3, paragraph 14, and the sleeve is made of steel (iron mixed with about 1.7% of carbon) as shown in page 4, paragraph 17, they can be said to be formed of the same material which is metal (not metal and fiber reinforced resin, for example). The specification shows that the end rings can be made of cast aluminum only (page 3,

Art Unit: 2834

paragraph 14), but the sleeve can be made of various substances including “aluminum, aluminum alloy, copper, copper alloy, nickel, nickel alloy, titanium, and steel, or other similar materials” (page 4, paragraph 17). The specification does not teach to make the end rings of “aluminum alloy, copper, copper alloy, nickel, nickel alloy, titanium, and steel, or other similar materials”. Therefore, the specification implies that “the same material” could be metal (aluminum and steel or aluminum and copper).

In addition, the term “alloyed” in claims 1 and 9 also causes confusion. Merriam Webster's Collegiate Dictionary defines alloy as “a substance composed of two or more metals or of a metal and a nonmetal ...” See Merriam Webster's Collegiate Dictionary, tenth edition, page 31. Therefore, if the sleeve is alloyed meaning that the material used to make the sleeve must contain more than two different metals or a metal and a nonmetal. As a result, the end rings must also be alloyed because it is required to be made from “the same material” with the sleeve. If the end rings are not alloyed and the sleeve is alloyed, “the same material” could only be understood as metal.

It is further noted that the claims in this application are open-ended claims meaning that the end rings could be further recited to be alloyed as the sleeve.

Moreover, it is not clear how “the sleeve has at least the same mechanical strength than the end ring” and then “a higher mechanical strength than the end ring” as claimed in claim 9.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, 7 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Stark (5,144,735).

Regarding claim 1, Stark shows a rotor for an electric motor, comprising:

- A rotor core (12);
- At least one end ring (14a) connected to the rotor core; and
- At least one support sleeve (16) attached to said at least one end ring via an interference fit, wherein the support sleeve applies a compressive stress on the end ring,
- Wherein the support sleeve and the end ring material are made from the same material (metal, aluminum and iron) and wherein the support sleeve is alloyed (add carbon to become steel and then chromium to become stainless steel) to have a higher mechanical strength than the end ring. Also see Merriam Webster's Collegiate Dictionary, tenth edition, page 31, column 2 for "alloy"; page 1144, column 2 for "stainless steel"; and page 1151, column 1 for "steel".

Regarding claims 2, 7 and 8, it is noted that Stark also shows all of the limitations of the claimed invention including the same thermal characteristic (because of being made of metal and metal is known to have "same" high heat conductivity. However, aluminum and aluminum alloy cannot be said to have the same thermal characteristic

Art Unit: 2834

because aluminum alloy contains at least one more base metal and each base metal has different heat conductivity.)

7. Claims 9, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Lake (3,517,238).

Regarding claim 9, Lake shows an electric motor, comprising:

- An electromagnet (a stator) that generates a magnetic field;
- A rotor that rotates in the magnetic field, the rotor comprising:
- A rotor core (12) having a first end and a second end;
- First and second end rings (18) connected to the said first and second ends, respectively of the rotor core; and
- First and second support sleeves (20) interference fitted onto said first and second end rings, respectively, to apply a compressive stress on the first and second end rings,
- Wherein the support sleeve and the end ring are made from the same material (metal, iron and copper) and have the same thermal characteristic (copper and iron can be said to have the same thermal characteristic because metal substances have high heat conductivity. However, aluminum and aluminum alloy cannot be said to have the same thermal characteristic because aluminum alloy contains at least one more base metal and each base metal has different heat conductivity), wherein the support sleeve has at least the same mechanical strength than the end ring (iron vs. copper), and

wherein the support sleeve is alloyed (add carbon to become steel and then chromium etc.) to have a higher mechanical strength than the end ring.

Regarding claims 12 and 13, it is noted that Stark also shows all of the limitations of the claimed invention.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stark.

Regarding claim 6, Stark shows all of the limitations of the claimed invention except for a magnitude of the interference fit being between 0.1% and 0.5% of a nominal diameter of an interface between the end ring and the support sleeve. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to set a magnitude of the interference fit between 0.1% and 0.5% of a nominal diameter of an interface between the end ring and the support sleeve, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lake.

Regarding claim 11, Lake shows all of the limitations of the claimed invention except for a magnitude of the interference fit being between 0.1% and 0.5% of a

Art Unit: 2834

nominal diameter of an interface between the end ring and the support sleeve.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to set a magnitude of the interference fit between 0.1% and 0.5% of a nominal diameter of an interface between the end ring and the support sleeve, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Information on How to Contact USPTO

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dang D Le whose telephone number is (571) 272-2027. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571) 272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

9/11/04

A handwritten signature in black ink, appearing to read 'Dang D Le', with a stylized, cursive script.

DANG LE
PRIMARY EXAMINER